

being yellowish-white. Under-side : apex of fore-wing pale yellow, the black colour forming only a curved transverse bar, besides the two black spots ; hind-wings wholly pale yellow, and having a small disco-cellular black spot ; body yellowish.

Expanse of wings  $2\frac{1}{4}$  to  $3\frac{3}{8}$  inches.

*Hab.* Darjeeling, Assam. In Mus. East India Company.

The form of the wings of *Pieris Durvasa* is the same as in *P. Paulina* and *P. Pandione*.

6. *PAPILIO JANAKA*, Moore, n. sp. (Pl. XLV.)

Upper-side black ; hind-wing with a white patch on the disc, which is divided by three of the veinlets, thus forming four separate patches, the outer one on each side being the shortest, and the two nearest the abdominal margin being tinged with red ; three submarginal and three marginal lunules and circular mark at anal angle red ; tail with two red spots. Under-side black ; fore-wing with the base red ; hind-wing with patch on the disc as on upper-side, but the portion nearest abdominal margin nearly covered with red, which colour is continued upwards and downwards, occupying the base of the wing and the whole space between the third median veinlet and submedian vein ; lunules as above, but are larger, and a fourth submarginal one appears between the discoidal and first median veinlets ; tail spotted as above ; cilia between the angles white ; head, neck, body beneath and sides red.

Wings shaped as in *P. Bootes*, Westw. Arc. Ent. t. 31.

Expanse of wings 5 inches.

*Hab.* Darjeeling. In Mus. East India Company.

*Remark.*—*Papilio Bootes* appears to be a near ally of *P. Janaka*.

---

May 26, 1857.

Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read :—

1. DESCRIPTION OF CHINESE SHEEP SENT TO H. R. H. PRINCE ALBERT BY RUTHERFORD ALCOCK, ESQ., H.M. VICE-CONSUL AT SHANGHAI. PRESENTED BY H. R. H. TO THE ZOOLOGICAL SOCIETY IN APRIL 1855. BY A. D. BARTLETT, ESQ.

(Mammalia, Pl. LII.)

These Sheep differ from all others that I have seen in not possessing external ears. In size they are equal to ordinary sheep ; the wool is perfectly white, rather *course and mixed with long hairs* ;

the head and face are smooth, and covered with white hair; they have no horns; the tail is short, rather broad, and turned up at the tip; the profile is very convex.

My attention was first called to these sheep from the fact of their great reproductive power. I find they breed twice in a year, and produce four and sometimes five at a birth, the three ewes now in the Society's Gardens having this spring produced *thirteen lambs*. These lambs are very easily reared by hand, and are perfectly hardy. Upon referring to Miss Corner's 'History of China,' published in 1847, it appears that since the introduction of the cotton plant into China (which took place during the Ming dynasty, about 500 years ago), the breeding and rearing of sheep have been neglected, as the following extract will show:—

“The extended cultivation of cotton was one of the causes that led to the almost entire disappearance of sheep from the southern provinces, for it was found that it would take much more land to supply a certain number of persons with mutton and wool, than with rice and cotton. Then the pastures were gradually turned into rice and cotton plantations, while sheep were banished to the mountains and less fertile parts of the country. For the same reason cattle, horses, and other domestic animals are scarce; the few that are kept for the purposes of husbandry are poor and ill-fed; for there is not a common one which they can graze, so that they are tied up in stalls when not employed in the field. Dairy farms are unknown in China, where people use neither milk, butter, nor cheese.”

In a recent letter from China, the writer mentions, among other matters, that in giving a good dinner to some distinguished friends, one of the choicest dishes was a leg of mutton, the cost of which was equal to 30*π*.

Having submitted specimens of the wool of this animal to my friend Dr. Price, who kindly forwarded the same to Mr. Darlington, the Secretary to the Chamber of Commerce at Bradford, for the purpose of having it examined by the most competent judges, the following report from these gentlemen was received. They say, “That the sample of sheep's wool from China enclosed in Dr. Price's letter, is a class of wool which would be extensively used by the manufacturers of this district for goods of low quality; that it appears to be wool suitable for combing purposes, and would now command about one shilling per pound.”

That the wool does not appear to offer any great inducement for its introduction will be seen by the above report. I, however, think it highly probable by cultivation and judicious crossing, a great improvement may be fairly looked for. It is, however, to us a matter of the utmost importance that we should possess animals whose power of reproducing is greatest, in order to supply the increased demand for meat.

The origin of our domestic animals has been a subject of much discussion; the remote period of their domestication involves us in much doubt; and this mystery and obscurity will probably never be satisfactorily cleared up. It is, however, interesting to find in a

country whose civilization is of such ancient date as China, the most perfect of domestic animals : I mean by this, the animals that are furthest removed from their natural condition.

Now, knowing what wonderful changes can be, and are produced in the vegetable kingdom by skilful modes of propagating, cultivating and artificially treating plants, causing them completely to change their nature, producing all kinds of variety of monstrous growth, double flowers, fruit and seed in enormous abundance ;—all this being done by the interference of man, may I ask, is it not probable that a people like the Chinese, whom we know to have practised these arts for ages,—is it not likely that they have by artificial means induced a similar power in these domestic animals ; as we find, for example, the pigs, the fowls, the geese and the sheep of China more prolific than the same animals in any other part of the world ? Instances of Chinese sows producing twenty-two at a litter have come within my own observation ; their fowls are certainly unequalled for the number of their eggs, and their geese as reproducers stand unrivalled.

It is almost needless to say that the result of cultivation, whether as applied to plants or animals, has produced an unnatural and abnormal condition : instances too numerous to mention may be found, but it will be sufficient to notice the pigeons and ducks. The former in a wild state produce only two broods in a season ; while in a state of domestication they continue to breed all the year. The domestic ducks not only produce a much larger number of eggs, but one drake is sufficient for a number of ducks, five or six ; while in a state of nature they universally are found in pairs.

Experience has proved that by a careful admixture or crossing in the breed of the Chinese pigs, geese, and fowls, the mixed races are much improved in quality and size, while they retain the reproductive power undiminished, and the animals are more hardy. As regards poultry, I cannot admire the celebrated Cochin China breed in their pure state, but I have abundant proof of their great value for breeding and crossing ; the least possible trace of the breed appears sufficient to impart all that is desirable, and by after-breeding, the improvement that may be made is as astonishing as it is undeniable. As crossing the breed in the animals before mentioned has been attended with so much success, there is no reason why crossing the Sheep should not also produce a favourable result.

It must not be supposed, because the Chinese have banished their Sheep (having found cotton and rice more suited to their climate and better adapted to their wants), that they are unworthy of our notice, taking into consideration that in this country we cannot grow cotton or rice.

Having witnessed the many attempts that have been made to reduce some of the existing wild animals to a state of domestication, and observing the utter failure in all instances of producing what may fairly be called a domestic variety of any true species, I am inclined to believe it is necessary as a means of reducing wild animals to a domestic condition, that they must be crossed with nearly allied

species; by this means the creatures are rendered unnatural, and consequently dependent on man. Different varieties would doubtless be produced, according to the manner in which they were crossed, and permanent varieties would be thus established. Such is the opinion, at which I have arrived, after a long and mature consideration of this extremely interesting subject.

## 2. DESCRIPTIONS OF THIRTY-ONE NEW SPECIES OF LAND-SHELLS, FROM MR. CUMING'S COLLECTION.

By DR. L. PFEIFFER.

1. *HELIX SUBDECUSSATA*, Pfr. *Testa perforata, turbinata, tenuis, irregulariter plicato-striata, superne striis spiralibus obsolete decussata, pellucida, virenti-hyalina; spira conica, apice obtusula; anfr. 6 convexiusculi, ultimus non descendens, peripheria subcarinatus, basi convexior, nitidus; apertura obliqua, late lunaris; perist. simplex, rectum, marginibus remotis, columellari superne vix reflexiusculo.*

Diam. maj. 14, min. 12, alt. 9 mill.

Hab. Bombay.

2. *HELIX GRANUM*, Pfr. *T. perforata, turbinato-globosa, tenuis, confertissime costulato-striata, pullide cornea, rufulo irregulariter variegata; spira conoidea, acutiuscula; anfr. 5½ convexi, ultimus non descendens, prope suturam turgidulus; apertura vix obliqua, late lunaris; perist. simplex, rectum, marginibus subconvergentibus, columellari vix patulo.*

Diam. maj. 4, min. 3¾, alt. 3 mill.

Hab. New Zealand.

3. *HELIX FATUA*, Pfr. *T. perforata, turbinata, tenuiuscula, irregulariter striata, vix nitidula, fulva; spira conoidea, acutiuscula; anfr. 5-5½ modice convexi, ultimus non descendens, peripheria subcarinatus, basi convexiusculus; apertura parum obliqua, lunaris; perist. simplex, rectum, margine columellari substrictè declivi.*

Diam. maj. 5, min. 4½, alt. 2½ mill.

Hab. New Zealand.

4. *HELIX BIRMANA*, Pfr. *T. perforata, depressa, suborbicularis, tenuiuscula, lævigata, subdiaphana, alba, fascia 1 lutea supra medium ornata; spira brevissime conoidea, vertice sensim prominulo; sutura lævis, marginata; anfr. fere 7 modice convexi, lente accrescentes, ultimus rotundatus, non descendens; apertura vix obliqua, late lunaris; perist. rectum, intus subincrassatum, margine dextro brevi, basali fere rectilineari, superne vix dilatato.*

Diam. maj. 26, min. 23½, alt. 12¼ mill.

Hab. Mergui, Burmah.